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DIRECTOR OF CENTRAL INTELLIGENCE

Security Committee

SECOM-D-716

16 November 1979

MEMORANDUM FOR: Chairman, DCI Security Committee

FROM:

[REDACTED]
Executive Secretary

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SUBJECT: HPSCI Report and Polygraph

1. FYI, NSA is eager to participate in the preparation of material for SECOM member attention in connection with the HPSCI report. They are limited in opportunity to more than comment on the investigation issues in the report because DIS does their investigation. They do have material to offer in connection with the polygraph issue and have done so.

2. Attached is their submission to the Investigation Working Group meeting of 16 November 1979. They offer comments on the:

- utilitarian use of the polygraph based on statistical analysis of results of [REDACTED] cases they conducted in the past 5 years;
- qualifications of their examiners;
- polygraph techniques used at NSA i.e., [REDACTED]
- make a claim that independent scientific research has been conducted and demonstrated that the technique is valid and reliable. They cite some studies and give supporting data from them; and

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- agree with the HPSCI that additional research is desirable and state that in this context, the DoD is pursuing the feasibility of such research through the Office of the Undersecretary of Defense for Research and Engineering.

3. Comments:

1. C/Poly Branch may find this info of interest in his preparation of a response for the DCI to Boland's letter. I have made a copy available to him for info.
2. CIA is unilaterally preparing the response to Boland's letter. NSA's offer to coordinate and participate was set aside by CIA. There might be more than associational advantages if CIA changed their mind on independent action, at least to the extent of being willing to provide NSA with opportunity to review and perhaps even comment on the proposed CIA prepared response. After all, does not Boland's letter imply that the DCI should respond for the Community on this matter.
3. We don't know what triggered the request for DoD R&E to do a study of the polygraph but CIA might be putting the DCI in a poor light if we have him sign a position paper to the HPSCI that says he doesn't think there is advantage to academic research on the validity of the polygraph while at the same time DoD is committing funds and resources to do just that.
4. There could be disadvantages or at least a missed opportunity if CIA fails to have some input into determining the "feasibility" of pursuing polygraph research.

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4. Suggestions:

a. I suggest that you might want to reconsider the present idea of having CIA unilaterally and independently prepare the DCI response to Mr. Boland.

b. I suggest that you might find short term and long range advantage if you permit the Chief of our Polygraph Branch to initiate contact with NSA on their issue and to participate in the deliberations of the SECOM's Investigation Working Group as your representative (as Director of Security, CIA)



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Attachments

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VALIDITY AND THE RELEVANT - IRRELEVANT TECHNIQUE

ABSTRACTS OF RESEARCH

Blum, Richard H. and Osterloh, William "The Polygraph Examination as a Means for Detecting Truth and Falsehood in Stories Presented by Police Informants," *Journal of Criminal Law, Criminology and Police Science* 59 (1) (1968): 133-137.

Seventeen male and three female informants who had given information on criminal cases to local or federal agencies were selected and paid to engage in the experiment. Great care was taken to protect their identities and the fact that they were cooperating with the police, as their lives would otherwise be in danger. Some of the stories that the informants were to tell the polygraph examiner were true, some were false, and some were partly true and partly false. The true stories were those which had been provided to their handler on a previous occasion which had stood the scrutiny of investigation. A false story was one jointly invented by the officer and the informant, but they were compatible with the informant's ordinary role and opportunities, and contained credible information. True stories with false information followed the same rules as the true story with certain false information added with the joint agreement of the police officer and his informant. The false items were credible and compatible with the whole story, and the false items were important to the investigation, such as the name of an offender, the place where goods were hidden or fenced, etc. The story was first written, then rehearsed with the police handler.

Of nine stories that were all true, the examiner was correct in his diagnosis of all of them. No true stories were designated as false or partly false.

Of the eleven stories that were either partly or entirely incorrect, the examiner was correct in saying that each of these was either partly or wholly false. None of these were diagnosed as completely truthful.

In all, there were 106 statements to be checked for veracity. The examiner made four errors among the seven subjects who told stories that were only partly true. In two cases, the examiner made an error in judging a lie as the truth in one of the five elements of the partly true story. In one other case, the examiner made two errors among the five subsets, calling one truthful element deceptive and one deceptive element truthful. Of the 106 statements, made by twenty subjects, the examiner was correct in 102 (96.2%). The technique was relevant-irrelevant.

Gustafson, Lawrence A. and Orne, Martin T. "The Effects of Task and Method of Stimulus Presentation on the Detection of Deception," *Journal of Applied Psychology* 48 (6) (December 1964): 383-387.

The study was designed to investigate the relative effectiveness of two different polygraph techniques, relevant-irrelevant and peak of tension. Subjects were given two RI and two POT tests. 29 were guilty, and 24 subjects had guilty knowledge. Only an electrodermal measure was scored for this research.

The RI method proved more effective in detection than the POT method when subjects were trying to deceive as to which item of information they possessed, in the guilty information paradigm. There was no significant difference in the effectiveness of the RI method of stimulus presentation between the guilty person paradigm and the guilty information paradigm. The POT method proved significantly less effective than the RI method in the guilty information paradigm, and significantly less effective in that paradigm than it was in the guilty person paradigm. In general, subjects found it easier to deceive in the guilty information paradigm where they could attempt to "appear guilty" on a non-critical item, especially in the peak of tension because they could anticipate the order of presentation of the items.

Eileen I. Correa and Henry E. Adams "The Validity of the Pre-employment Polygraph Examination and the Effects of Motivation." *In Press*, University of Georgia, Athens, Georgia, 1979.

Forty subjects took pre-employment examinations (RI technique). Half were to tell the truth, and half were to be deceptive to three of the nine questions. Recordings included respiration from a thermister probe at the nostril, EKG for heart rate, and electrodermal. A cardiosphygmograph was not employed.

The experimenter, in separating the truthful and untruthful subjects was correct in all cases, for 100%. Identification of lies, by subject, ranged from 68% to 100%. There were no cases in which a truthful person was called deceptive (false positives). All of the errors were in failing to identify a lie.

Lying responses were characterized by significantly larger increases in conductance in the electrodermal and larger decreases in heart rate, than the responses to telling the truth. Respiration showed no significance in these recordings.

An attempt to separate subjects by motivation, offering half of the group \$25.00 if they could deceive the examiner, showed no significance.

Edel, Eugene C. and Jacoby, Jacob "Examiner Reliability in Polygraph Chart Analysis: Identification of Physiological Responses," *Journal of Applied Psychology* 60 (5) (1975): 632-634.

Ten experienced examiners working independently on actual case charts involving responses to 2,530 questions from 40 polygraph interview cases were examined in detail.

Because each examiner made judgments of reaction or no reaction to each question, of which there were 2,530, on each of three channels, he made 7,590 decisions. The channels were cardiovascular, electrodermal, and respiratory. The agreement between the original examiner and a blind rater was 96% for cardiovascular, 95% for electrodermal, and 96% for respiratory responses. In terms of total agreement between all examiners who read all of the charts, the agreement was 96% cardiovascular, 91% for electrodermal, and 96% for respiratory responses. The overall percentage of agreement for rater versus rater was 94%.

The technique was relevant-irrelevant. All of the examinations were from screening cases. Of the total 22,770 judgments there were 21,626 agreements for an overall agreement rate of 95%, including the examiner-rater and rater-rater combinations.

MacNitt, Reginald D. "In Defense of the Electrodermal Response and Cardiac Amplitude as Measures of Deception," *Journal of Criminal Law, Criminology and Police Science* 33 (1942): 266-275.

Professor MacNitt conducted 59 cases with the relevant-irrelevant (RI) technique that involved employees made available by the Columbus, Ohio Merchants Audit Bureau. Prior investigative results were withheld from him. There were employees whose honesty and integrity were above reproach, employees who had confessed to stealing goods and money, but were told to lie, and employees who were suspected of stealing and about whom there was quite a bit of evidence already in the possession of authorities. The latter group was expected to lie.

MacNitt said that his results were "correctly reported...and checked by confessions or the verifiable records of the employees, the operator failing only on a few minor details. In all of these 59 cases, the electrodermal response was the more accurate of the two employed." The other channel recorded cardiac rate and amplitude.

Hemsley, Gordon, Heslegrave, Ronald J. and Furedy, John J. "Can Deception be Detected When Stimulus Familiarity is Controlled?" Paper presented at the annual seminar of the Society for Psychophysiological Research, Cincinnati, Ohio, October 18, 1979.

Using a pre-employment test paradigm with relevant-irrelevant technique, ten male and ten female subjects were divided into two groups, one which was to be deceptive to some of the 20 items of biographical information supplied on application forms, and one group which was to be truthful about all of the biographical information on the forms. Because the stimulus familiarity was controlled, with all biographical information known to the subjects in advance, the issue was whether or not larger ANS responses would occur to deception alone. Skin conductance response was used to measure ANS responses.

The skin conductance response was significantly, $F=64.1$, greater for deceptive ($X = 2.28$ umhos) than for honest ($X = 1.40$ umhos) responses.

Neither an habituation effect nor a sex difference emerged. The experimenters concluded that the design allows the skin conductance response to detect, in the laboratory, "pure deception" because that emotional arousal associated with question content, and enhanced stimulus familiarity or signal value associated with the relevant alternative, have been eliminated as confounding sources.